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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,203	03/25/2004	Toshimitsu Hirai	9319S-000716	5989

27572 7590 01/09/2007  
HARNESS, DICKEY & PIERCE, P.L.C.  
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EXAMINER
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KIM, SU C

ART UNIT	PAPER NUMBER
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2823

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/09/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/809,203

Applicant(s)

HIRAI, TOSHIMITSU

Examiner

Su C. Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 5, 9, 10 and 13-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 9, 10 and 13-17 is/are rejected.
- 7) ☐ Claim(s) 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-3, 5, 9-10, and 13-17 have been considered but are moot in view of the new ground(s) of rejection.

### ***Allowable Subject Matter***

1. The indicated allowability of claims 2-4, 12, 13, & 14-17 are withdrawn in view of the newly discovered reference(s) to Yudasaka (US 6476988). Rejections based on the newly cited reference(s) follow.

### ***Claim Objections***

2. Claim 16 is objected to because of the following informalities: " a step of lyophilizing at least one of the electrode-forming region and the conductive-layer forming region" is claimed in claim 1

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 5, & 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Kamishiro Kazuhiro (JP 2000-243254) ('hereafter Kamishiro') in view of Yudasaka (US 6476988)

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5. Pertaining claims 1, Kamishro discloses a method for manufacturing electron emitters by providing pairs of element electrodes, and conductive layers (Drawing 3(h), 2 & 3) connecting the element electrodes (Drawing 3(h), 5) to each other on a substrate (Drawing 2(a), 1), the method comprising:

- a step of forming banks (Drawing 2(a)-(c), 34) surrounding electrode-forming regions for forming the element electrodes (Drawing 3(h), 2 & 3) and conductive layer-forming regions 4 for forming the conductive (Drawing. 2 & 3)

- a step of discharging first droplets toward the electrode-forming regions (Drawing 2 (a)-2(e));

- and a step of discharging second droplets toward the conductive layer-forming regions (Drawing 3-(g)); and

- a step of removing bank(Drawing 3(g)-3(i))

- a step of lyophilizing at least one of the electrode-forming region and the conductive-layer forming region(Paragraph 0015 & 0021, "while making hydrophilic property of an optical exposure part (bank)" is consider as lyophilizing step)

Pertaining claim 5, as applied to claim 1, Kamishro discloses an electron emitter manufactured by the method according to claim 1. (See the rejection on claim 1)

Pertaining claim 16, as applied to claim 1 above, Kamishro discloses all the limitations include, a step of lyophilizing at least one of the electrode-forming region and

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the conductive-layer forming region(Paragraph 0015 & 0021, "while making hydrophilic property of an optical exposure part (bank)" is consider as lyophilizing step)

6. Claims 2, 3, 9, 10, 13, 14, 15, &17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamishiro Kazuhiro (JP 2000-243254) in view of Yudasaka (US 6476988)

Pertaining claims 2 & 3, as applied to claim 1 above paragraph 4, Kamishiro discloses all the limitations include, electron emitters.

However, Kamishiro fails to teach a step of lyophobic the bank or the banks are formed using a lyophobic material.

Yudasaka discloses forming banks with surface treatment to create repellent by irradiating ultraviolet layer (Fig. 10A-B, Column 1, lines 56-63)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant(s) claimed invention is made to provide Kamishiro reference with a step of lyophobic the bank or the banks are formed using a lyophobic material taught by Yudasaka in order to produce reliable device.

Pertaining claim 9, Kamishiro discloses a method for manufacturing an electron emitter comprising:

defining a pair of spaced apart electrode (Drawing 3(i), 2 & 3) forming regions on a substrate (Drawing 2 (c)-(d));

defining a conductive layer-forming region on the substrate, the conductive layer 4 forming region interconnecting the electrode-forming regions (Drawing 3 (h));

forming a bank (Drawing 2(c), 32) encircling the electrode-forming regions and the conductive layer forming region (Drawing 2(c)) ;

discharging first droplets (Drawing 2(d), 35) toward the electrode-forming regions to form a pair of element electrodes (Fig. 2 (e)); and

discharging second droplets (Drawing 3(g), 37) toward the conductive layer-forming regions to form a conductive layer connecting the element electrodes to each other (Drawing 3(g)); and

removing the bank after the conductive layer and element electrodes are formed (Drawing 3(f)-(i) and details on paragraph 2 above)

Kamishiro fails to teach rendering the bank lyophobic

Yudasaka discloses forming banks with surface treatment to create repellent by irradiating ultraviolet layer (Fig. 10A-B, Column 1, lines 56-63)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant(s) claimed invention is made to provide Kamishiro reference with rendering the bank lyophobic taught by Yudasaka in order to produce reliable device.

Pertaining claim 10, as applied to claim 9 above paragraph 6, Kamishiro and Yudasaka in combination disclose all the limitations include, treating a portion of the conductive layer (Kamishiro Drawing 3(g), 4) to form an electron-emitting section (Drawing 3(g), 5).

Pertaining claim 13, as applied to claim 9 above paragraph 6, Kamishro and Yudasaka in combination disclose all the limitations include, the electrode-forming region (Kamishro, Fig. 2c-d, 34); and the conductive layer-forming region (Kamishro, Fig. 5, 5, 4); lyophilic (Kamishro, hydrophilic property of an optical exposure part (paragraph 21))

Pertaining claims 14 & 17, Kamishro discloses a method for manufacturing electron emitters by providing pairs of element electrodes, and conductive layers (Drawing 3(h), 2 & 3) connecting the element electrodes (Drawing 3(h), 5) to each other on a substrate (Drawing 2(a), 1), the method comprising:

- a step of forming banks (Drawing 2(a)-(c), 34) surrounding electrode-forming regions for forming the element electrodes (Drawing 3(h), 2 & 3) and conductive layer-forming regions 4 for forming the conductive (Drawing. 2 & 3) .

- a step of discharging first droplets toward the electrode-forming regions (Drawing 2 (a)-2(e));

- and a step of discharging second droplets toward the conductive layer-forming regions (Drawing 3-(g))

Kamishro fails to teach rendering the bank lyophobic

Yudasaka discloses forming banks with surface treatment to create repellent by irradiating ultraviolet layer (Fig. 10A-B, Column 1, lines 56-63)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant(s) claimed invention is made to provide Kamishro reference with rendering the bank lyophobic taught by Yudasaka in order to produce reliable device.

Pertaining claim 15, as applied to claim 14 above paragraph 6, Kamishro and Yudasaka in combination disclose all the limitations includes, the banks are formed using a lyophobic material (column 4, line 53-57, non-affinity material is considered as lyophobic material which create repelling force to in-jet drop resin after the surface treatment.)

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Su C. Kim whose telephone number is (571) 272-5972. The examiner can normally be reached on Monday - Thursday, 9:00AM to 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Su C. Kim  
12/28/2006

  
BROOK KEBEDE  
PRIMARY EXAMINER